Listing of claims:

1. (Original) An apparatus comprising:

a temperature sensor block that is arranged to provide a temperature signal (TEMP) that is responsive to changes in an operating temperature (T);

a level shifter block that is arranged to: receive the temperature signal (TEMP), and provide a level shifted temperature signal (TEMPLS) that is related to the temperature signal (TEMP) by a DC level shift;

a gain block that is arranged to: receive the level shifted temperature signal (TEMPLS) and provide an output signal (OUT) that is related to the level shifted temperature signal (TEMPLS) according to a gain factor (G);

an analog-to-digital converter (ADC) block that is arranged to: receive the output signal (OUT), and provide a control signal (CTL2) that is related to an operating temperature; and

a control logic block that is arranged to: receive the control signal (CTL2) and provide another control signal (CTL1) to at least one of the level shifter block and the gain block such that a dynamic range associated with the temperature sensitivity of the apparatus is extended.

2. (Original) The apparatus of claim 1, the temperature sensor block is arranged such that the temperature signal is proportional-to-absolute-temperature (PTAT).

3. (Original) The apparatus of claim 1, wherein the temperature sensor block is arranged such that the temperature signal corresponds to at least one of a voltage that is proportional-to-absolute temperature (VPTAT) and a current that is proportional-to-absolute temperature (IPTAT).

4. (Original) The apparatus of claim 1, the level shifter block comprising a plurality of level shifter circuits (LS1 - LSN), wherein each of the plurality of level shifter circuits is

arranged to provide a different DC level shift to temperature signal (TEMP) resulting in a plurality of level shifted temperature signals (TEMPLS1 - TEMPLSN).

5. (Original) The apparatus of claim 4, the level shifter block further comprising a multiplexer circuit that is arranged to receive the plurality of level shifted signals (TEMPLS1 - TEMPLSN) and select one of the plurality of level shifted signals (TMPELS1 - TEMPLSN) as the level shifted temperature signal (TEMPLS) in response to the other control signal (CTL1).

6. (Original) The apparatus of claim 1, the level shifter block comprising a level shifter circuit (LS) and an adjustable bias circuit, wherein the adjustable bias circuit is arranged to provide a biasing signal (BIAS) to the level shifter circuit (LS) such that the a DC level shift associated with the level shifted temperature signal (TEMPLS) is responsive to a bias adjustment signal (BIASADJ) that corresponds to the other control signal (CTL1).

7. (Original) The apparatus of claim 1, the gain block comprising a plurality of gain circuits (G1 - GN), wherein each of the gain circuits is arranged to operate over different signal input ranges such that each of the plurality of gain circuits (G1 - GN) is arranged to respond to different temperature ranges associated with the temperature signal (TEMP) resulting in a plurality of output signals (S1 - SN).

8. (Original) The apparatus of claim 7, the gain block further comprising a multiplexer circuit that is arranged to receive the plurality of output signals (S1 - SN) and select one of the plurality of output signals (S1 - SN) as the output signal (OUT) in response to the other control signal (CTL1).

9. (Original) The apparatus of claim 8, the ADC block comprising a plurality of comparator circuits (CP1 - CPN) that are arranged in cooperation with a decoder logic block, wherein each of the plurality of comparators (CP1 - CPN) is arranged to receive a respective one of the plurality of output signals (S1 - SN), and wherein the decoder logic block is arranged to

cooperate with the multiplexer circuit to select an appropriate one of the plurality of output signals (S1 - SN) based on a temperature range that is identified by the ADC block.

10. (Original) The apparatus of claim 1, wherein the temperature sensor block, the level shifter block, the gain block, the analog-to-digital converter (ADC) block, and the control logic block are provided in an integrated circuit.

11. (Original) The apparatus of claim 1, wherein the level shifter block and the gain block are combined in a common circuit.

12. (Original) An apparatus comprising:

a sense means that is arranged to provide a temperature signal (TEMP) that is responsive to changes in an operating temperature (T);

a level shifting means that is arranged to provide a level shifted temperature signal (TEMPLS) that is related to the temperature signal (TEMP) by a DC level shift;

a gain means that is arranged to: receive the level shifted temperature signal (TEMPLS) and provide an output signal (OUT) that is related to the level shifted temperature signal (TEMPLS) according to a gain factor (G);

an analog-to-digital converter (ADC) means that is arranged to: receive the output signal (OUT), and provide a control signal (CTL2) that is related to the operating temperature; and

a control means that is arranged to: receive the control signal (CTL2) and provide another control signal (CTL1) to at least one of the level shifter block and the gain block such that a temperature sensitivity range associated with the apparatus has an extended dynamic range.

13. (Currently Amended) ~~An apparatus~~ A method comprising:

sensing an operating temperature (T) associated with the apparatus to provide a temperature signal (TEMP);

adjusting a DC offset to provide a level shifted temperature signal (TEMPLS) that is related to the temperature signal (TEMP) according to a level shift factor;

scaling a signal level that is associated with the level shifted temperature signal (TEMPLS) to provide an output signal (OUT); that is related to the level shifted temperature signal (TEMPLS) according to a gain scale factor;

identifying the operating temperature (T) based on the output signal (OUT); and

changing at least one of the level shift factor and the gain scale factor in response to the detected range of operating temperatures such that a dynamic range associated with the temperature sensitivity of the apparatus is extended.

14. (Currently Amended) ~~The apparatus~~ The method of claim 13, wherein sensing an operating temperature (T) comprises providing the temperature signal (TEMP) with a sensor that is operable over a range of sensor signal levels; and wherein scaling a signal level comprises scaling with an amplifier circuit that is operable over a range of input signal levels that is narrower than the range of sensor signal levels.

15. (Currently Amended) ~~The apparatus~~ The method of claim 14, wherein adjusting the DC offset comprises dynamically adjusting the DC offset such that the level shifted temperature signal (TEMPLS) is within the range of input signal levels of the amplifier circuit.

16. (Currently Amended) ~~The apparatus~~ The method of claim 13, wherein sensing an operating temperature (T) comprises providing the temperature signal (TEMP) with a sensor that is operable over a range of sensor signal levels; and wherein scaling a signal level comprises: selecting an output from one of a plurality of amplifier circuits, wherein each amplifier circuit is operable over a range of input signal levels that is narrower than the range of sensor signal levels.

17. (Currently Amended) ~~The apparatus~~ The method of claim 16, wherein adjusting the DC offset comprises dynamically adjusting the DC offset such that the level shifted temperature

signal (TEMPLS) is within the range of input signal levels of at least one of the plurality of amplifier circuits.

18. (Currently Amended) ~~The apparatus~~ The method of claim 13, wherein sensing an operating temperature (T) comprises providing the temperature signal (TEMP) with a sensor that is operable over a range of sensor signal levels; wherein adjusting the DC offset comprises coupling the temperature signal (TEMP) to a plurality of level shifter circuits, and selecting an output from one of the plurality of level shifter circuits; and wherein scaling a signal level comprises scaling with an amplifier circuit that is operable over a range of input signal levels that is narrower than the range of sensor signal levels, wherein the selected level shifter circuit is arranged to adjust the DC offset such that the level shifted temperature signal (TEMPLS) is within the range of input signal levels of the amplifier circuit.

19. (Currently Amended) ~~The apparatus~~ The method of claim 13, wherein sensing an operating temperature (T) comprises providing the temperature signal (TEMP) with a sensor that is operable over a range of sensor signal levels; wherein adjusting the DC offset comprises coupling the temperature signal (TEMP) to a plurality of level shifter circuits; and wherein scaling a signal level comprises: coupling the outputs of the plurality of level shifter circuits to a plurality of amplifier circuits, wherein each amplifier circuit is operable over a range of input signal levels that is narrower than the range of sensor signal levels, wherein the plurality of level shifter circuits are arranged to adjust the DC offset such that the level shifted temperature signal (TEMPLS) such that each of the plurality of amplifier circuits is operable over a different range of temperatures associated with the temperature signal (TEMP).

20. (Currently Amended) ~~The apparatus~~ The method of claim 19, wherein changing at least one of the level shift factor and the gain scale factor corresponds to selecting an output from one of the plurality of amplifier circuits.